



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,706	04/28/2006	Tadahiro Ohmi	039262-0150	4847
22428 7590 03/04/2009 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007				
			EXAMINER	
			CHEN, KEATH T	
			ART UNIT	PAPER NUMBER
			1792	
			MAIL DATE	DELIVERY MODE
			03/04/2009 PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/568,706

Applicant(s)

OHMI ET AL.

Examiner

KEATH T. CHEN

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-43 is/are pending in the application.
- 4a) Of the above claim(s) 42 and 43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/23/2009 has been entered.

Response to Amendment

1. The claim amendment filed on 01/23/2009, addressing rejection of claims 1-4, 9-14, 19, 21, 24, 28-30, 32, and 33 from the final office action (07/24/2008), by cancelling claims 1-4, 9-14, 19, 21, 24, 28-30, 32, and 33 and adding new claims 34-43 is acknowledged and will be addressed below. The examiner notices that the amendment was made without citing support.

Election/Restrictions

2. Newly submitted claims 42-43 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 34-41, drawn to apparatus, classified in class 118, subclass 715.
- II. Claims 42-43, drawn to method, classified in class 427, subclass 457.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus as claimed can be used to practice another and materially different process, such as depositing metal.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 42-43 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. **Claims 34, 35, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (US 4889319, hereafter '319), further in view of Yoshiro et al. (English translation of JP2002-310302, hereafter '302) and Horsky et al. (US 20030230986, hereafter '986). (US 20070037922 and 3114778 are cited for definition of perfluoroelastomer.)**

'319 teaches some limitations of:

Claim 34: A vapor deposition apparatus (Fig. 4) for use in depositing an organic EL layer (is capable of), the vapor deposition apparatus comprising: a process chamber

(#36, deposition chamber, col. 7, lines 3-4) for carrying out vapor deposition on a substrate (semiconductor processing, col. 6, lines 65-68); a substrate introducing chamber (preparation chamber #33, col. 7, line 1) connected to the process chamber through a gate valve (#54, bakeable gate valve, col. 7, lines 23-25); a substrate introducing door (#50, col. 7, line 20) connected to the substrate introducing chamber; a deposition source chamber (Fig. 4, #38 and #43, Knudsen cells, col. 7, lines 4-5) connected to the process chamber and having a deposition source container (Knudsen cell is a container); a shutter mechanism (col. 7, line 14-15) between the deposition source chamber (knusen cell #38/#43 or later named #105) and the process chamber (#36); a first primary pump (#47, col. 7, lines 8-9) connected to the process chamber through a pump gate valve (#56, col. 7, lines 23-24); a first gasket (#69 or #83, see Fig. 5, col. 7, line 36 and 57), placed between the substrate introducing door (#50) and the substrate introducing chamber (#33); a second gasket (#92, O-ring of gate valve for #54, see Fig. 6 or 7) placed between the substrate introducing chamber and the process chamber; a third gasket (#92, O-ring of gate valve for #56, see Fig. 6 or 7) placed between the first primary pump and the process chamber.

'319 further teaches that conventional vacuum systems have all-metal seals (col. 1, lines 58-62) including gasket for exhaust means; seals of various forms is required in doors at sample entry ports (col. 2, lines 9-11) because the frequency of open/close (col. 2, lines 30-31) and cost of metal gaskets (col. 2, lines 23-31). '319's invention includes an elastomeric gasket (col. 2, lines 49-50) for the door gaskets.

'319 does not teach the other limitations of:

Claim 34: a fourth gasket placed between the process chamber and the shutter mechanism; and a fifth gasket placed between the shutter mechanism and the deposition source chamber, wherein: the first gasket and the fifth gasket are formed by a perfluoroelastomer, and the second, third, and fourth gaskets are formed by metal or ceramic.

'302 is an analogous art in the field of sealing material for a vacuum system, particularly in providing superior sealing performance (abstract). '302 recognizes the need to lower organic emission of volatile component in the next generation of fabrication factory ([0003]) and provides organic perfluoroelastomer ([0007]) with small emission of organic matter ([0044]).

'986 is an analogous art in the field of semiconductor processing, particularly in deposition source (title). '986 teaches a gate valve/shutter mechanism (#3, [0172]) with a gasket (#6, Fig. 3A for example) between the process chamber (see Fig. 1, for example) and the shutter mechanism, and a gasket (#4) between the shutter mechanism and the crucible/deposition source chamber (#18, [0174]).

At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have combined '986 and '302 with '319. Specifically, to have replaced the Knudsen cells of '319 with crucibles/deposition sources (#18) along with the gate valve/shutter mechanism and seals on both sides of the shutter

mechanism, as taught by '986, for the purpose of suitability. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. MPEP 2144.07. Furthermore, to have adopted the perfluoroelastomer of '302 as the elastomeric material for the gaskets in the apparatus in Fig. 4 of '319, for the purpose of reducing emission of organic matter, as taught by '302 ([0004]), and applied perfluoroelastomer (from '302) to the sample entry ports but all-metal seals at other ports (col. 1, lines 58-62), as taught by '319 (col. 2, lines 9-10) and for the cost of metal gaskets (col. 2, lines 23-31). Notes that the first gasket and the fifth gasket can be considered as sample entry port (for wafer and for deposition material, respectively), or as depending on the frequency of the opening/closing door ('319, col. 2, lines 30-31), depending on the mode of operation of the apparatus.

'319 further teaches the limitations of:

Claim 35: The vapor deposition apparatus according to claim 34, further comprising a sixth gasket (#92, O-ring of gate valve for #52, last line of col. 7 to first line of col. 8, see Fig. 6 or 7) placed between the substrate introducing chamber and a second primary pump (#46, col. 8, line 1), the sixth gasket being formed by metal or ceramic (col. 1, lines 58-62).

Claim 38: The vapor deposition apparatus according to claim 34, wherein the second, third, and fourth gaskets are formed by copper (col. 1, line 61).

4. **Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over '319, '302, and '986, further in view of Fareed et al. (US 20020058107, hereafter '107).**

'319, '302, and '698, together, teach all limitations of claim 34, as discussed above. '698 is silent on the details of crucible (#18).

'319, '302, and '698, together, do not teach the limitations of:

Claim 36: The vapor deposition apparatus according to claim 34, wherein the deposition source container is made of alumina.

Claim 37: The vapor deposition apparatus according to claim 36, wherein the deposition source container has an inner surface substantially flat by polishing.

The limitation of "by polishing" is considered as a product-by-process claim. When the reference teaches a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process claim although produced by a different process. See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) and *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP §2113.

'107 is an analogous art in the field of CVD ([0029]), particularly in using a crucible ([0144]). '107 teaches an alumina crucible (#120, Fig. 5g, [0164], lines 13-16) with substantially smooth/flat inner surface (as shown in Fig. 5g).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '107 with '319, '302, and '986. Specifically, to have adopted an alumina crucible with substantially flat inner surface, as taught by '107, for the motivation of suitability. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. MPEP 2144.07.

5. **Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over '319, '302, and '986, further in view of Hisaharu et al. (English translation of JP06-107803, hereafter '803).**

'319, '302, and '698, together, teach all limitations of claim 34, as discussed above. '302 further teaches the treatment of sealant in acetone.

'319, '302, and '698, together, do not teach the limitations of:

Claim 39: The vapor deposition apparatus according to claim 34, wherein the first gasket has been subjected to a process of contacting it with water at 80°C or more.

'803 is an analogous art in the field of sealing material, particularly in solving the gas emission of fluororubber (abstract, lines 1-2). '803 teaches treatment of crosslinked rubber, including perfluoroelastomer ([0017] 2nd last two lines) in contact with a solvent, including water ([0037], line 1), at 95-100° C to lower gas emission (abstract, lines 8-10).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '803 with '319, '302, and '986. Specifically, to have treated the gasket made of perfluoroelastomer of '302 in water at 95-100° C according to '803 for the purpose of lower gas emission, with a reasonable expectation of success.

6. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over '319, '302, and '986, further in view of Ji et al. (US 20030098419, hereafter '419).

'319, '302, and '698, together, teach all limitations of claim 34, as discussed above.

'319, '302, and '698, together, do not teach the limitations of:

Claim 40: The vapor deposition apparatus according to claim 34, further comprising: a first secondary pump connected to an exhaust side of the first primary pump; and a gas introducing portion for introducing an inert gas between the first primary pump and the first secondary pump.

Claim 41: The vapor deposition apparatus according to claim 35, further comprising: a second secondary pump connected to an exhaust side of the second primary pump; and a gas introducing portion for introducing an inert gas between the second primary pump and the second secondary pump.

'419 is an analogous art in the field of CVD (abstract). '419 teaches semiconductor fabrication often use multi-stage dry pumps with interstage nitrogen purge gas injection ([0073]).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '419 with '319, '302, and '986. Specifically, to have replaced the pump system of '319 with multistage dry pumps with '319, '302, and '986, for the purpose/motivation of attenuate sudden change in reactor gases, as taught by '419 ([0073]).

Response to Arguments

Applicant's arguments filed on 01/23/2009 have been fully considered but they are not persuasive.

7. Applicants cancellation of previous claims 1-33 overcomes the previous claim objections and 35 USC 112 rejections.
8. Applicant's arguments with respect to new claims 33-41 have been considered but are unconvincing in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEATH T. CHEN whose telephone number is (571)270-1870. The examiner can normally be reached on 6:30AM-3 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. T. C./
Examiner, Art Unit 1792
/Ram N Kackar/
Primary Examiner, Art Unit 1792